

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket: SPIRA=1A

In re Application of:)	Conf. No.: 4939
)	
Micha SPIRA et al)	Art Unit: Not Yet Assigned
)	
Appln. No.: 10/560,315)	Examiner: Not Yet Assigned
)	
Filing Date: June 10, 2004)	Washington, D.C.
)	
For: ELECTRONIC DEVICE FOR)	September 12, 2006
COMMUNICATING WITH...)	
)	

INFORMATION DISCLOSURE STATEMENT [IDS]

Honorable Commissioner for Patents
U.S. Patent and Trademark Office
Randolph Building, Mail Stop Amendments
401 Dulany Street
Alexandria, VA 22314

Sir:

This Information Disclosure Statement is submitted in accordance with 37 CFR §§1.97, 1.98, and it is requested that the information set forth in this statement and in the listed documents be considered during the pendency of the above-identified application, and any other application relying on the filing date of the above-identified application or cross-referencing it as a related application.

[X] 1. This IDS should be considered, in accordance with 37 CFR §1.97, as it is filed:

[] A. within three months of the filing date of the above-identified national application or within three months of the entry into the national stage of the above-identified international application.

[X] B. before the mailing date of a first office action on the merits or before the mailing of a first Office action after the filing of a Request for Continued Examination under 37 CFR §1.114; or

☐ C. after (A) and (B) above, but before final rejection or allowance, and Applicant has made the necessary certification (box "i" below) or paid the necessary fee (box "ii" below):

☐ i. Counsel certifies that, upon information and belief, each item of information listed herein either was

☐ (a) first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS; or

☐ (b) not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of undersigned after making reasonable inquiry, not known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this IDS.

☐ ii. Credit Card Payment Form, PTO-2038, is attached authorizing payment of the fee set forth in 37 CFR §1.17(p), presently believed to be \$180. If the enclosed payment is incorrect, please charge any additional fees or credit any overpayment to Deposit Account No. 02-4035 of the undersigned.

☐ D. after (A), (B) and (C) above, but before payment of the issue fee: Applicant states as follows under 37 CFR §1.97(e) for consideration of this IDS, that, upon information and belief, each item of information listed herein either was

☐ (a) first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS; or

- ☐ (b) not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned after making reasonable inquiry, not known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this IDS.

Credit Card Payment Form, PTO-2038, is attached authorizing payment of the fee set forth in 37 CFR §1.17(p), presently believed to be \$180. If the enclosed payment is incorrect, please charge any additional fees or credit any overpayment to Deposit Account No. 02-4035 of the undersigned.

☒ 2. In accordance with 37 CFR §1.98, this IDS includes a list (e.g., form BN/SB/08A/B) of all patents, publications, or other information submitted for consideration by the office, either incorporated into this IDS or as an attachment hereto. Other than U.S. patent(s) and/or published U.S. application(s), which 37 CFR §1.98(a)(2)(ii) does not require to be filed unless specifically required by the Office, a copy of each document listed is attached, except as explained below:

☐ A. Document(s) _____ is/are deemed substantially cumulative to document(s) _____, and, in accordance with 37 CFR §1.98(c), a copy of each of the former document(s) is not enclosed.

☐ B. Certain documents were previously cited by or submitted to the Office in the following prior application(s), which are relied upon under 35 U.S.C. 120:

(insert serial numbers and filing dates of prior applications)

Applicant identifies these documents by attaching hereto copies of the forms PTO-892, PTO-1449, PTO/SB/08a and/or PTO/SB/08b (or their BN form equivalents) from the files of the prior application(s) or a fresh BN/SB/08A and/or BN/SB/08B listing these documents, and request that they be considered and made of record in accordance with 37 CFR §1.98(d). Per 37 CFR

§1.98(d), copies of these documents need not be filed in this application.

☐ 3. Document(s) _____ is/are not in the English language. In accordance with 37 CFR §1.98(a)(3), Applicant states:

☐ An English translation of each document _____ (or of the pertinent portions thereof), or a copy of an English-language abstract (or claim) is enclosed.

☐ For documents _____, a corresponding English-language patent or published application is included on the accompanying Form BN/SB/08A, with a line drawn in the margin connecting the non-English-language document with its corresponding English-language document.

☐ A concise explanation of the relevance of document(s) _____ is found in the attached _____ search report (see reply to Comment 68 in the preamble to the final rules; 1135 OG 13 at 20).

☐ A concise explanation of the relevance of document(s) _____ is set forth as follows:

☐ A concise explanation of the relevance of document(s) _____ can be found on page(s) _____ of the specification.

☐ A concise explanation of the relevance of document(s) _____ can be found on the attached sheet.

☒ 4. No explanation of relevance is necessary for documents in the English language (see reply to Comments 67 and 68 in the preamble to the final rules; 1135 OG 13 at 20).

☒ 5. Other information being provided for the examiner's consideration follows:

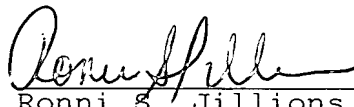
International Search Report mailed November 3, 2004

6. In accordance with 37 CFR §§1.97(g) and (h), the filing of this IDS should not be construed as a representation that a search has been made or that information cited is, or is considered to be, material to patentability as defined in 37 CFR §1.56(b), or that any cited document listed or attached is (or constitutes) prior art. Unless otherwise indicated, the date of publication indicated for an item is taken from the face of the item and Applicant reserves the right to prove that the date of publication is in fact different.

Respectfully submitted,

BROWDY AND NEIMARK
Attorneys for Applicant(s)

By:



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(use as many sheets as necessary)

Sheet	1	of	6
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Complete if Known

Application Number	10/560,315
Filing Date	PCT Filing Date: June 10, 2004
First Named Inventor	Micha SPIRA et al
Group Art Unit	Not Yet Assigned
Confirmation No.	4939
Attorney Docket Number	SPIRA=1A

[illegible]

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Number Country Code ³ Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
	AA	EP 2000097899	04-07-2000	NTT Advanced Technology Corp.	Abstract	
	AB	WO 00/51191	08-31-2000	Yissum Research Development Company		
	AC	EP 2001156398	06-08-2001	Canon Inc.	Abstract	
	AD	WO 01/25769 A2	04-12-2001	Sophion Bioscience A/S		
	AE	WO 03/104789 A1	12-18-2003	Rutgers, the State University of New Jersey, University of Medicine & Dentistry of New Jersey		
	AF	WO 2004/044573 A1	05-27-2004	Yissum Research Develop.		

Examiner
Signature

Date
Considered

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kind Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language translation is attached.

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Complete if Known			
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		Examiner Name	4939		
Sheet	2	of	6	Attorney Docket Number	SPIRA=1A

NON PATENT LITERATURE DOCUMENTS / OTHER INFORMATION			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
	AG	Stett, A., Muller, B., Fromherz, P., "Two-way silicon- neuron interface by electrical induction", <i>Phys. Rev. B.</i> , 55: 1779-1781 (1997)	
	AH	Fromherz, P., "Electrical Interfacing of Nerve Cells and Semiconductor Chips", <i>Chemphyschem.</i> 3:276-84; 2002	
	AI	Weis R., and P. Fromherz. "Frequency dependent signal-transfer in neuron-transistors", <i>Physical Review E.</i> 55:877-889; January 1997	
	AJ	Weis R., B. Muller, and P. Fromherz, "Neuron Adhesion on a Silicon Chip Probed by an Array of Field-Effect Transistors", <i>Physical Review Letters.</i> 76:327-330; 8 January 1996	
	AK	Kandel, E.R. 2001, "The Molecular Biology of Memory Storage: A Dialog Between Genes and Synapses", <i>Bioscience Report</i> vol. 21, No. 5 pp. 565-611; October 2001	
	AL	Kandel, E.R. 2001, "The Molecular Biology of Memory Storage: A Dialogue Between Genes and Synapses", <i>Science.</i> 294:1030-8; 2 November 2001	
	AM	Zeck G., and P. Fromherz., "Noninvasive neuroelectronic interfacing with synaptically connected snail neurons immobilized on a semiconductor chip", <i>Proc Natl Acad Sci U S A.</i> 98:10457-62, August 28, 2001;	
	AN	Aderem, A., and D.M. Underhill. 1999, "Mechanisms of phagocytosis in macrophages", <i>Annu Rev Immunol.</i> 17:593-623	
	AO	May, R.C., and L.M. Machesky, 2001, "Phagocytosis and the actin cytoskeleton", <i>J Cell Sci.</i> 114:1061-77	
	AP	Indik Z. et al., 1991, "Human Fc, RII, in the absence of other Fc, receptors, mediates a phagocytic signal", <i>J Clin Invest.</i> 88:1766-71	
	AQ	Blystone S.D. et al., November 1994, "Integrin alpha v beta 3 Differentially Regulates Adhesive and Phagocytic Functions of the Fibronectin Receptor alpha 5 beta 1", <i>J Cell Biol.</i> 127:1129-37	
	AR	Stahl P.D., and R.A. Ezekowitz, 1998, "The mannose receptor is a pattern recognition receptor involved in host defense", <i>Current Opinion in Immunology</i> 10:50-5	

Examiner Signature		Date Considered	
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		Examiner Name	4939
Sheet 3	of 6	Attorney Docket Number	SPIRA=1A

NON PATENT LITERATURE DOCUMENTS / OTHER INFORMATION			
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	AS	Dahlgren K et al., "Immobilization of Enzymes Based on Hydrophobic Interaction. I. Preparation and Properties of a β -Amylase Adsorbate; Biotechnology and Bioengineering, Vol. XVIII, pp. 1573-1588 (1976)	
	AT	Critchley D.R., 2000, "Focal adhesions - the cytoskeletal connection", Current Opinion in Cell Biol. 12:133-9	
	AU	Heiple J.M. et al., 1990, "Macrophages Form Circular Zones of Very Close Apposition to IgG-Coated Surfaces", Cell Motility Cytoskeleton. 15:260-70	
	AV	Willner, I.; Katz, E. Angew. "Enzyme electrodes allow the production of more types of products" Chem., Int. Ed. 2000, 39, 1180-1218	
	AW	Yang, M. et al., Anal. "Acoustic Network Analysis as a Novel Technique for studying protein adsorption and Denaturation at Surfaces" Chem. 1993, 65, 3713-3716	
	AX	Caruso F. et al., J. "Characterization of Ferritin Adsorption onto Gold" Colloid Interface Science 1997, 186, 129-140	
	AY	Razumas V., Arnebrant T., J. "Direct electrochemistry of microperoxide - 11 at gold electrodes modified by self-assembled monolayers of 4,4'-dithiodipyridine and 1-octadecanethiol" Electroanalytical Chemistry. 1997, 427, 1-5	
	AZ	Moulin A. M. et al., " Measuring Surface-Induces Conformational Changes in Protein" Langmuir 1999, 15, 8776-8779	
	BA	Armstrong F. A. et al., "Reaction of electron-transfer proteins at electrodes" Q. Rev. Biophys. 1986, 18, 261-322	
	BB	Ulman A., "Formation and Structure of Self-Assembled Monolayers" Chem. Rev. 1996, 96, 1533-1554	
	BC	Prime K. L., Whitesides G. M., J. Am. "Adsorption of Protein onto Surfaces Containing End-Attached Oligo (ethylene oxide): A Model System Using Self-Assembled Monolayers" Chem. Soc. 1993, 115, 10714-10721	
	BD	Lahiri J. et al., "A Strategy for the Generation of Surfaces Presenting Ligands for Studies of Binding based on an Active Ester as a Common Reactive Intermediate: A Surface Plasmon Resonance Study" Anal. Chem. 1999, 71, 777-790	

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	BE	Spinke J. et al., "Molecular Recognition at Self-Assembled Monolayers: Optimization of surface functionalization" J. Chem Phys. 1 November 1993, 99, 7012-7019		
	BF	Spinke J. et al., "Molecular Recognition at Self-Assembled Monolayers: The Construction of Multicomponent Multilayers" Langmuir 1993, 9, 1821-1825		
	BG	Jain A., Huang S. G., Whitesides, "Lack of Effect of the Length of Oligoglycine and Oligo (ethylene glycol)-Drives para-Substituents on the Affinity of Benzenesulfonamides for Carbonic Anhydrase II in Solution" G. M. J. Am. Chem. Soc. 1994, 116, 5057-5062;		
	BH	Mrksich M., Grunwell J. R., Whitesides "Biospecific Adsorption of carbonic Anhydrase to Self-Assembled Monolayers of Alkanethiolates That Present Benzenesulfonamide Group on Gold" G. M., J. Am. Chem. Soc. 1995, 117, 12009-12010		
	BI	Frey B. L. et al., "Control of the specific adsorption of Protein onto Gold Surfaces with poly(L-Iysine) Monolayers" Anal. Chem. 1995, 67, 4452-4457		
	BJ	Schlereth D. D., "Preparation of gold surface with biospecific affinity for NAD(H)-dependent lactate dehydrogenase" Sens. Actuators, B 1997, 43, 78-86		
	BK	Schlereth D. D., Kooyman R. P. H., "Self-assembled monolayers with biospecific affinity for NAD(H)-dependent dehydrogenases: characterization by surface plasmon resonance combined with electrochemistry 'in situ' J. Electroanal. Chem. 1998, 444, 231-240		
	BL	Perez-Luna V. H. et al, "Molecular Recognition between Genetically Engineered Streptavidin and Surface-Bound Biotin" J. Am. Chem. Soc. 1999, 121, 6469-6478		
	BM	Porath J. et al., "Metal Chelate affinity chromatography, a new approach to protein fractionation" Nature 1975, 258, 598-599		
	BN	Mosbach G. R. et al., "Protein of Cellulose-Bound Enzymes" Methods Enzymol. 1976, 44, 53-65		
	BO	Mattiasson B., "Affinity Immobilization" Methods Enzymol. 1988, 137, 647-656		
	BP	Bastida A. et al, "A Single Step Purification, Immobilization, and Hyperactivation of Lipases via Interfacial Adsorption on Strongly Hydrophobic Support" Biotechnol. Bioeng. 1998, 58, 486-493		

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	BQ	Turkova J, "Oriented immobilization of biologically active protein as a tool for revealing protein interactions an function" <i>J. Chromatogr., B</i> 1999 , 722, 11-31	
	BR	Willner I. et al, "Electrical Wiring of Glucose Oxidase by Reconstitution of FAD-Modified Monolayers Assembled onto Au-Electrodes" <i>J. Am. Chem. Soc.</i> 1996 , 118, 10321-10322	
	BS	Schmidt H.-L., Schuhmann W., "Reagentless oxidoreductase sensors" <i>Biosens. Bioelectron.</i> 1996 , 11, 127-135	
	BT	Katz E. et al., "Reconstitution of the quinoprotein glucose dehydrogenase from its apoenzyme on a gold electrode surface modified with monolayer of pyrroloquinoline quinine" <i>J. Electroanal. Chem.</i> 1994 , 368, 165-171	
	BU	Guo L.-H. et al, "Photo-active and electro-active protein films prepared by recostitution with metalloporphyrins self-assembled on gold" <i>J. Mater. Chem.</i> 1996 , 6, 369-374	
	BV	Katz E. et al, "Electrical contact of redox enzymes with electrodes: novel approaches for amperometric biosensors" <i>Bioelectrochem. Bioenerg.</i> 1997 , 42, 95-104	
	BW	Willner I. et al, "Assembly of functionalized monolayers of redox protein on electrode surfaces: novel bioelectronic and optobioelectronic system" <i>Biosens. Bioelectron.</i> 1997 , 12, 337-356	
	BX	Gorton L. et al, "Direct electron transfer between heme-containing enzymes and electrodes as basis for third generation biosensors" <i>Anal. Chim. Acta</i> 1999 , 400, 91-108	
	BY	Hodneland, C. D.; Lee, Y.-S.; Min, D.-H.; Mrksich, M. <i>Proc. "Selective immobilization of protein to self-assembled monolayers presenting active site-directed capture ligands"</i> <i>Natl. Acad. Sci. U.S.A.</i> 2002 , 99, 5048-5052	
	BZ	Gilardi, G.; Fantuzzi, A.; Sadeghi, S. J. "Engineering and design in bioelectrochemistry of metalloproteins" <i>Curr. Opin. Stuct. Biol.</i> 2001 , 11, 491-499	
	CA	Pierrat, O.; Lechat, N.; Bourdillon, C.; Laval, J. M. "Electrochemical and Surface Plasmon Resonance Characterization of the Step-by-Step Self-Assembly of a Biomimetic Structure onto an Electrode Surface" <i>Langmuir</i> 1997 , 13, 4112-4118	
	CB	Darder, M.; Casero, E.; Pariente, F.; Lorenzo, E. "Biosensors Based on Membrane-Bound Enzymes Immobilized in a 5-(Octyldithio)-2-nitrobenzoic Acid Layer on Gold Electrodes" <i>Anal. Chem.</i> 2000 , 72, 3784-3792	

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	CC	W. C. Wildering, P. M. Hermann, A. G. M. Bulloch "Neurite Outgrowth, RGD-Dependent, and RCG-Independent Adhesion of Identified Molluscan Motoneurons on Selected Substrates" J Neurobiol 35: 37-52, 1998	
	CD	Sfez R. et al., "Polyaniline Monolayer Self-Assembled on Hydroxyl-Terminated Surfaces" Langmuir 2001, 17(9), 2556-2559	
	CE	Turyan, I.; Mandler, D., "Two-Dimensional Polyaniline Thin Film Electrodeposited on a Self-Assembled Monolayer" J. Am. Chem. Soc. 1998, 120, 10773-10742	
	CF	MA X L et al: "Microstructural characterization of Si cones fabricated by Ar<+>-sputtering Si/Mo targets" Journal of crystal Growth, North Holland Publishing, Amsterdam, NL Vol. 234, no. 4, February 2002, pages 654-659	
	CG	Fromherz P: "Semiconductor chips with ion channels, nerve cells and brain", Physica Elsevier Netherlands, Vol. 16 no. 1, January 2003, Pages 24-34	

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